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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,789	12/09/2003	Marlin H. Mickle	214001-01038-1	4950

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ECKERT SEAMANS CHERIN & MELLOTT  
600 GRANT STREET  
44TH FLOOR  
PITTSBURGH, PA 15219

EXAMINER
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PREVIL, DANIEL

ART UNIT	PAPER NUMBER
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2612

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/731,789

Applicant(s)

MICKLE ET AL.

Examiner

Daniel Previl

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/1/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

This action is responsive to communication filed on November 1, 2006.

#### ***Claim Objections***

1. Claims 1-41 are objected to because of the following informalities: Claims 1, 15, 24, 33, after "comprising" in all occurrences, insert -----:----- . Appropriate correction is required.

Claims 2-14, 16-23, 25-32, 34-41 are objected for the same reason, since they depend from objected claims.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 15-18, 20-21, are rejected under 35 U.S.C. 102(b) as being anticipated by Ruby (US 5,883,575).

Regarding claim 15, Ruby discloses determining if an article of interest is present (col. 1, lines 10-14) comprising: article of interest having at least one antenna being resonant at one frequency of a plurality of available frequencies (col. 3, lines 10-23); a non-linear element operatively associated with antenna (col. 3, lines 51-60); an RF frequency generator for directing RF energy of a

particular frequency to antenna (col. 3, lines 10-23); a detector for receiving reflected RF energy from antenna (col. 3, lines 18-23; col. 4, lines 1-7); a processor for determining from a difference between said reflected frequency and said directed particular frequency whether the antenna is a specific antenna (col. 3, lines 53-65; col. 4, lines 5-39).

Regarding claim 16, Ruby discloses a non-linear element is a rectifying diode (col. 3, lines 58-59).

Regarding claims 17-18, Ruby discloses antenna assembly providing a half wave rectified sine wave from interrogating RF energy (fig. 2; fig. 6; fig. 11b; col. 3, lines 42-45).

Regarding claim 20, Ruby discloses RF frequency generator being structured to provide at least two said interrogating RF frequencies (fig. 7, fig. 9; fig. 12b; col. 3, lines 51-65).

Regarding claim 21, Ruby discloses a spectrum analyzer for analyzing said different frequencies (col. 3, lines 51-65).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-14, 19, 22-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruby et al. (US 5,883,575) in view of Cook (US 3,911,434).

Regarding claim 1, Ruby discloses a method of identifying an article of interest (col. 1, lines 10-14) comprising: providing the step of interrogating said one RF antenna with RF energy of a first frequency (col. 3, lines 14-18), converting said interrogating RF energy into reflected energy RF energy of a different frequency from said first frequency (col. 3, lines 14-23); sensing said reflected RF energy and on the basis of a difference between said first frequency and said different frequency determining if a specific said antenna is present (fig. 6-fig. 9; col. 4, lines 1-39).

Ruby discloses all the limitations above but fails to explicitly disclose one of a plurality of RF antennas each having a non-linear element and being resonant at one of plurality of different frequencies positioned on an article of interest.

However, Cook discloses one of a plurality of RF antennas (antennas 14, 16 in fig. 1) each having a non-linear element and being resonant at one of plurality of different frequencies positioned on an article of interest. (fig. 2; col. 3, lines 35-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's plurality of antennas in Ruby's system. Doing so would modify Ruby's system with Cook's plurality of antennas in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 2, Ruby discloses a non-linear element is a rectifying diode (diodes in col. 3, line 59).

Regarding claim 3, Ruby discloses specific antenna is present and different frequency being about double first frequency (fig. 7; fig. 9; fig. 12b; col. 5, lines 20-25).

Regarding claims 4-5, 7, Ruby discloses antenna assembly providing a half wave rectified sine wave from interrogating RF energy fig. 2; fig. 6; fig. 11b; col. 3, lines 42-44).

Regarding claims 6, 19, Ruby and Cook disclose all the limitations in claim 1 and Cook further discloses half wave rectified sine wave has a fundamental Fourier series which is about double the frequency of said sine wave (col. 3, lines 1-19; col. 4, lines 23-39). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's half wave sine wave in Ruby's system. Doing so would modify Ruby's system with Cook's half wave sine wave in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 8, Ruby discloses the step of employing a spectrum analyzer in analyzing different frequency (col. 3, lines 51-65).

Regarding claims 9-11, Ruby discloses the step of employing a binary analysis in determining if an article of interest is present, employing a spectrum analyzer structured to monitor each interrogating frequency in determining if an article of interest is present (col. 4, lines 30-45).

Regarding claims 12, 22, Ruby and Cook disclose all the limitations in claim 15 and Cook further discloses a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition (col. 3, lines 66-68; col. 4, lines 1-17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's non-linear element to provide a variable readout in Ruby's system. Doing so would modify Ruby's system with Cook's non-linear element to provide a variable readout in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 13, Ruby discloses physical condition selected from radiation (col. 3, lines 18-22).

Regarding claim 14, Ruby discloses the step of employing as non-linear elements a variable non-linear element (col. 3, lines 58-59).

Regarding claim 23, Ruby and Cook disclose all the limitations in claim 15 and Cook further discloses physical condition, being a condition selected from pressure (col. 3, lines 42-47). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's physical condition in Ruby's system. Doing so would modify Ruby's system with Cook's physical condition in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 24, Ruby discloses interrogating said one RF antenna with RF energy of a first frequency (col. 3, lines 14-15), converting said

interrogating RF energy into reflected energy RF energy of a different frequency from said first frequency (col. 3, lines 10-23).

Ruby discloses the limitation above but fail to explicitly disclose a method of monitoring an ambient physical property comprising: providing an antenna having a non-linear element whose response depends on the physical property being monitored; said different frequency being dependent on the physical property being monitored; and sensing said reflected RF energy and on the basis of a difference between said first frequency and said different frequency determining the state of said physical property.

However, Cook discloses a method of monitoring an ambient physical property (fig. 1-fig. 2) comprising: providing an antenna having a non-linear element whose response depends on the physical property being monitored (col. 3, lines 37-48); said different frequency being dependent on the physical property being monitored (col. 3, lines 48-65); and sensing said reflected RF energy and on the basis of a difference between said first frequency and said different frequency determining the state of said physical property (col. 2, lines 40-47; col. 3, lines 1-19).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's physical condition in Ruby's system. Doing so would modify Ruby's system with Cook's physical condition in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 25, Ruby discloses a non-linear element is a rectifying diode (col. 3, lines 59-60).



Regarding claim 26, Ruby discloses different frequency being about double first frequency (fig. 7; fig. 9; fig. 12b).

Regarding claims 27-28, Ruby discloses antenna assembly providing a half wave rectified sine wave from interrogating RF energy (fig. 2; fig. 6; col. 3, lines 42-45).

Regarding claim 29, Ruby and Cook disclose all the limitations in claim 24 and Cook further discloses half wave rectified sine wave has a fundamental Fourier series which is about double the frequency of said sine wave (col. 3, lines 1-19; col. 4, lines 23-39). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's half wave sine wave in Ruby's system. Doing so would modify Ruby's system with Cook's half wave sine wave in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 30, Ruby discloses the step of employing a spectrum analyzer (col. 3, lines 51-65).

Regarding claim 31, Ruby and Cook disclose all the limitations in claim 24 and Cook further discloses a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition (col. 3, lines 66-68; col. 4, lines 1-17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's non-linear element to provide a variable readout in Ruby's system. Doing so would modify Ruby's system with Cook's non-linear element to provide a variable

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readout in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 32, Ruby and Cook disclose all the limitations in claim 24 and Cook further discloses physical condition being a condition selected from pressure (col. 3, lines 42-47). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's physical condition in Ruby's system. Doing so would modify Ruby's system with Cook's physical condition in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 33, Ruby discloses antenna being resonant at one frequency of a plurality of available frequencies (col. 3, lines 10-23); an RF frequency generator for directing RF energy at a particular frequency to said antenna (col. 3, lines 13-15).

Ruby discloses all the limitations above but fails to explicitly disclose an apparatus for monitoring an ambient physical property comprising: a non-linear element operatively associated with said antenna whose response depends on the physical property being monitored, a detector for receiving reflected RF energy from said antenna, said reflected RF energy having a different frequency that is dependent on the physical property being monitored; and a processor for determining from a difference between said particular frequency and said different frequency the state of the physical property being monitored.

However, Cook discloses an apparatus for monitoring an ambient physical property (fig. 1-fig. 3) comprising: a non-linear element operatively associated with said antenna whose response depends on the physical property being monitored (col. 3, lines 37-48); a detector for receiving reflected RF energy from said antenna, said reflected RF energy having a different frequency that is dependent on the physical property being monitored (col. 3, lines 37-65); and a processor for determining from a difference between said particular frequency and said different frequency the state of the physical property being monitored (col. 2, lines 34-45; col. 3, lines 1-19).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's physical condition in Ruby's system. Doing so would modify Ruby's system with Cook's physical condition in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 34, Ruby discloses a non-linear element is a rectifying diode (col. 3, lines 58-60).

Regarding claims 35-36, Ruby discloses antenna assembly providing a half wave rectified sine wave from interrogating RF energy (fig. 2; fig. 6; col. 3, lines 42-45).

Regarding claim 37, Ruby and Cook disclose all the limitations in claim 33 and Cook further discloses half wave rectified sine wave has a fundamental Fourier series which is about double the frequency of said sine wave (col. 3, lines 1-19; col. 4,

lines 23-39). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's half wave sine wave in Ruby's system. Doing so would modify Ruby's system with Cook's half wave sine wave in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

Regarding claim 38, Ruby discloses RF frequency generator being structured to provide at least two said interrogating RF frequencies (fig. 7; fig. 9; col. 3, lines 60-65).

Regarding claim 39, Ruby discloses a spectrum analyzer for analyzing said different frequencies (col. 3, lines 51-65).

Regarding claims 40-41, Ruby and Cook disclose all the limitations in claim 33 and Cook further discloses a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition (col. 3, lines 66-68; col. 4, lines 1-17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Cook's non-linear element to provide a variable readout in Ruby's system. Doing so would modify Ruby's system with Cook's non-linear element to provide a variable readout in order to accurately identify rapidly and quickly an article of interest, thereby improving the efficiency of the system.

### ***Response to Arguments***

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6. Applicant's arguments with respect to claims 1-41 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Williams (US 4,471,344) discloses dual frequency anti-theft system.

Herzl (US 4,391,149) discloses a Doppler-type ultrasonic flowmeter.

Petrinovic (US 6,927,692) discloses an RF inventory system.

Newham (US 5,471,198) discloses a device for monitoring the presence of a person using a reflective energy beam.

Giles (US 4,274,089) discloses detection system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Previl whose telephone number is (571) 272-2971. The examiner can normally be reached on Monday-Thursday. The examiner can also be reached on alternate Fridays.

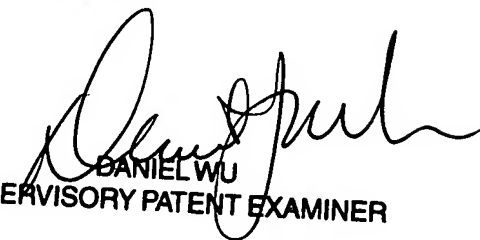
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel WU can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Previl  
Examiner  
Art Unit ~~2636~~ 2612

DP  
March 3, 2007.

  
DANIEL WU  
SUPERVISORY PATENT EXAMINER